

WHAT IS CLAIMED IS:

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1. A first agent configured for coupling to a bus to which a plurality of agents are capable of being coupled, said first agent comprising an arbiter coupled to receive a plurality of request signals, each of said plurality of request signals corresponding to a respective agent of said plurality of agents, wherein each of said plurality of request signals is indicative of whether or not said respective agent is arbitrating for said bus, and wherein said arbiter is coupled to receive an agent identifier transmitted on said bus as part of a transaction, said agent identifier identifying a second agent using said bus, and wherein said arbiter is configured to determine if said first agent wins an arbitration for said bus responsive to said plurality of request signals and said agent identifier.
2. The first agent as recited in claim 1, wherein said arbiter comprises one or more registers configured to store a state indicative of: (i) which of said plurality of agents are higher priority than said first agent for said arbitration; and (ii) which of said plurality of agents are lower priority than said first agent for said arbitration.
3. The first agent as recited in claim 2 wherein said arbiter further includes a circuit configured to generate a grant signal to said first agent responsive to said plurality of request signals and said state, said grant signal indicative of whether or not said first agent wins said arbitration.
4. The first agent as recited in claim 3 wherein said circuit is further responsive to said agent identifier to generate said grant signal.
- 25 5. The first agent as recited in claim 2 wherein said arbiter further comprises a circuit configured to update said state responsive to said agent identifier, wherein said circuit is configured to update said state to indicate that said second agent identified by said agent identifier is lower priority than said first agent if said second agent is different than said

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first agent.

6. The first agent as recited in claim 5 wherein said circuit is further configured to update said state to indicate that each of said plurality of agents is higher priority than said first agent responsive to said first agent winning said arbitration.

5 7. The first agent as recited in claim 1 wherein said bus is a split transaction bus, and wherein said arbiter is configured to arbitrate for an address portion of said bus, and wherein said agent identifier is a portion of a transaction identifier for said transaction.

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8. The first agent as recited in claim 1 wherein said bus is a split transaction bus, and wherein said arbiter is configured to arbitrate for a data portion of said bus, and wherein said agent identifier is separate from a transaction identifier for said transaction.

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9. A system comprising:

a bus, said bus including a plurality of request signals and an agent identifier transmitted with a transaction on said bus; and

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a plurality of agents coupled to said bus, each agent of said plurality of agents coupled to a respective one of said plurality of request signals for providing an indication of whether or not said agent is arbitrating for said bus, and wherein a first agent using said bus is configured to provide said agent identifier indicative of said first agent, and wherein each respective agent of said plurality of agents includes an arbiter coupled to receive each of said plurality of request signals corresponding to other ones of said plurality of agents and to receive said agent identifier, and wherein said arbiter is configured to determine if said respective agent wins an arbitration for said bus responsive to said plurality of request signals and

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 said agent identifier.

10. The system as recited in claim 9 wherein said arbiter comprises one or more registers configured to store a state indicative of: (i) which of said plurality of agents are higher priority than said respective agent for said arbitration; and (ii) which of said plurality of agents are lower priority than said respective agent for said arbitration.
11. The system as recited in claim 10 wherein said arbiter further includes a circuit configured to generate a grant signal to said respective agent responsive to said plurality of request signals and said state, said grant signal indicative of whether or not said respective agent wins said arbitration.
12. The system as recited in claim 11 wherein said circuit is further responsive to said agent identifier to generate said grant signal.
13. The system as recited in claim 10 wherein said arbiter further comprises a circuit configured to update said state responsive to said agent identifier, wherein said circuit is configured to update said state to indicate that said first agent is lower priority than said respective agent if said first agent is different from said respective agent.
14. The system as recited in claim 13 wherein said circuit is further configured to update said state to indicate that each of said plurality of agents is higher priority than said respective agent responsive to said respective agent winning said arbitration.
15. The system as recited in claim 9 wherein said bus is a split transaction bus, and wherein said arbiter is configured to arbitrate for an address portion of said bus, and wherein said agent identifier is a portion of a transaction identifier for said transaction.
16. The system as recited in claim 9 wherein said bus is a split transaction bus, and

Sub B1

wherein said arbiter is configured to arbitrate for a data portion of said bus, and wherein said agent identifier is separate from a transaction identifier for said transaction.

17. A method comprising:

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maintaining a state indicative of: (i) which of a plurality of agents coupled to a bus are higher priority than a first agent for an arbitration, and (ii) which of said plurality of agents are lower priority than said first agent for said arbitration;

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receiving an agent identifier indicative of a second agent using said bus, said agent identifier transmitted on said bus as part of a transaction; and

15 updating said state responsive to said agent identifier.

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18. The method as recited in claim 17 wherein said updating comprises updating said state to indicate that said second agent is lower priority than said first agent if said second agent is different from said first agent.

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19. The method as recited in claim 17 further comprising:

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receiving a plurality of request signals, each of said plurality of request signals corresponding to a respective agent of said plurality of agents and indicative of whether or not said respective agent is arbitrating for said bus; and

determining if said first agent wins said arbitration responsive to said state and said plurality of request signals.

Part B1

20. The method as recited in claim 19 wherein said determining is further responsive to said agent identifier.

21. The method as recited in claim 19 further comprising updating said state to indicate that each of said plurality of agents is higher priority than said first agent if said first agent wins said arbitration.

22. An arbiter comprising:

10 one or more registers configured to store a state indicative of: (i) which of a plurality of agents coupled to a bus are higher priority than a first agent for an arbitration, and (ii) which of said plurality of agents are lower priority than said first agent for said arbitration; and

15 a first circuit coupled to receive an agent identifier indicative of a second agent using said bus, said agent identifier transmitted on said bus as part of a transaction, wherein said first circuit is configured to update said state responsive to said agent identifier.

20 23. The arbiter as recited in claim 22 wherein said first circuit is configured to update said state to indicate that said second agent is lower priority than said first agent if said second agent is different from said first agent.

25 24. The arbiter as recited in claim 22 further comprising a second circuit coupled to said one or more registers and coupled to receive a plurality of request signals, each of said plurality of request signals corresponding to a respective agent of said plurality of agents and indicative of whether or not said respective agent is arbitrating for said bus, and wherein said second circuit is configured to determine if said first agent wins said arbitration responsive to said state and said plurality of request signals.

Part B1

25. The arbiter as recited in claim 24 wherein said first circuit is configured to update said state to indicate that each of said plurality of agents is higher priority than said first agent responsive to said first agent winning said arbitration.

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26. The arbiter as recited in claim 24 wherein said second circuit is configured to determine if said first agent wins said arbitration further responsive to said agent identifier.

10 27. The arbiter as recited in claim 22 wherein said bus is a split transaction bus, and wherein said arbiter is configured to arbitrate for an address portion of said bus.

28. The arbiter as recited in claim 27 wherein said agent identifier is a portion of a transaction identifier for said transaction.

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~~29. The arbiter as recited in claim 27 wherein said bus is a split transaction bus, and wherein said arbiter is configured to arbitrate for a data portion of said bus.~~

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30. The arbiter as recited in claim 29 wherein said agent identifier is separate from a transaction identifier for said transaction.

Part B2

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Sub A2